

AMENDMENTS TO THE DRAWINGS

Figure 3 has been amended to change two instances of “PERCIPITATION” to—
PRECIPITATION-- and to change reference numeral “67” to reference numeral --62--. A
replacement sheet is submitted herewith.

REMARKS

Claims 23-41 are currently pending. Claims 1-22 were previously cancelled and claims 30 and 31 are currently cancelled. Claim 23 is amended to correct a typographical error. Claim 28 is amended to incorporate claim 31. Claims 33 and 34 are amended for definiteness. New claims 35-39 are added and support can be found, for example, in Figure 3, and in the specification in paragraphs [0116] and [0121]. New claims 40 and 41 are added and support can be found, for example, in Figure 7B.

Specification

The abstract and specification have been amended to correct typographical errors, including those suggested by the Examiner.

Allowed Claims

Applicants thank the Examiner for the allowance of claims 23-27.

Claim Rejections Under 112

Claim 32 and 33 are rejected under 35 USC 112, 2nd paragraph as allegedly being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The Examiner states that the two electrolytes of claim 32 appear to be precursors of the separator of claim 33. However, this is incorrect. The Examiner is directed to the specification at paragraphs [0108] and [0109] and accompanying Figures 7a and 7b. The electrolyte 206 and electrolyte 210 include ingredients that react to form a self-formed separator 222, however the separator does not replace the electrolytes. Rather the separator is formed in between the two electrolytes upon contact by either a physical or chemical reaction (as shown in Figure 3). Claim 33 has been amended for clarification.

Claim Rejections Under 102

Claims 28-31 are rejected under 35 USC 102(b) as being allegedly anticipated by US Patent No. 4,889,777 to Akuto ("Akuto"). Akuto fails to disclose all the limitations of claim 28, and all claims dependent therefrom. Akuto discloses a battery having a positive electrode 12, a

negative electrode 13, and an electrolyte 15. The electrodes 12 and 13 are disposed coplanarly as shown in the top view of Fig. 5, and the electrolyte 15 can be placed between and on top of the electrode 12 and 13, as shown in Fig. 8. However, Akuto specifically states that the arrangement of his battery is such that “the *separator need not be used* unlike the conventional secondary battery” (col 6, lines 55-56, emphasis added). Therefore, in the preferred embodiment, Akuto does not have any separator. Furthermore, even though Akuto states that the “separator may be arranged as needed,” Akuto does not disclose a self-formed separator, or any ingredients in the electrolyte layer to form a separator (col 6, lines 56-59).

Contrary to the Examiner’s assertions, a self-formed separator with no separately added separator confers novel characteristics to the present product that is not true of the cited references. For instance, the contact between the pole layers and the self-formed separator is improved; the thickness, porosity and adhesiveness of the separator is better controlled; and even and efficient ionic conductivity is assured (paragraphs [0097] and [0147]).

Thus, Akuto does not disclose all the limitations of claim 28, and all claims dependent therefrom and Applicants respectfully request withdrawal of this rejection. Claims 30 and 31 have been cancelled thus this rejection is moot.

Claim Rejections Under 103

Claims 32-34 are rejected under 35 USC 103(a) as allegedly obvious over Akuto in view of U.S. Patent 5,219,673 to Kaun (“Kaun”). Akuto does not disclose all the limitations of claims 32-34 and Kaun does not cure these deficiencies.

With respect to claims 32 and 33, Akuto does not disclose all the limitations of claim 28 as discussed above, from which claims 32 and 33 depend. Kaun does not cure these deficiencies. Kaun discloses a electrochemical device having a negative electrode 12n, a positive electrode 12p, and an electrolyte 14. Kaun does not disclose a self-formed separator, or an electrochemical cell with a self-formed separator and an electrolyte, or any ingredients in the electrolyte layer that could react together to form a separator. If the solid electrolyte of Kaun was used in the cell of Akuto, the cell would still not include an electrolyte *and* an additional self-formed separator. The Examiner is incorrectly interpreting the dual function solid electrolyte of Kaun to be equivalent to the two components of electrolyte and the self-formed separator in the instant

claims. Thus, for at least the above reasons, Akuto and Kaun fail to disclose or suggest all the limitations of claims 32 and 33. Applicants respectfully request withdrawal of this rejection.

With respect to independent claim 34, neither Akuto or Kaun disclose an electrolyte layer comprising a first electrolyte solution and a second electrolyte solution; and an integral and in-situ formed interfacial separator layer *within* the electrolyte layer. Akuto discloses electrolyte 15 but does not disclose a first and second electrolyte solution. Kaun discloses solid electrolyte 14, but does not disclose a first and second electrolyte solution. The Examiner is interpreting claim 34 incorrectly to mean that the electrolyte would be the sole separator between the electrode. Rather, in the instant invention there is a separator *within* the electrolyte, as clarified in the amended claims. Thus, for at least the above reasons, Akuto and Kaun fail to disclose or suggest all the limitations of claim 34. Applicants respectfully request withdrawal of this rejection.

New Claims

Akuto and/or Kaun fail to disclose all the limitations of new claims 35- 41. Neither Akuto or Kaun disclose a self-formed separator and thus cannot disclose a self-formed separator that is a gel or polymer precipitate (claim 35) or first and second ingredients for forming a self-formed separator (claims 36-39). Neither Akuto or Kaun disclose more than one electrolyte layer (claim 40) or a self-formed separator between a first and a second electrolyte layer (claim 41). Thus, Applicants submit new claims 35-41 are allowable.

Conclusion

Although no fees are believed to be due, the Office may charge any additional fees required under 37 C.F.R. § 1.16 or § 1.17, or credit any overpayments, to Deposit Account No. 11-0600.

The Examiner is invited to contact the undersigned at 202-220-4200 to discuss any matter regarding this application.

Respectfully submitted,

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